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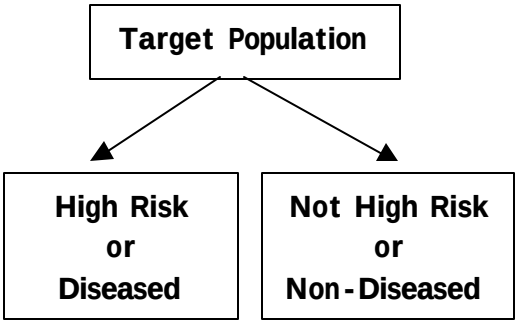
Health Care Epidemiology Population Perspectives- Part II

This notebook is a continued discussion on population perspectives, which is part of a series focusing on the many concepts of health care epidemiology. Future topics in this series will include health outcomes and evidence-based medicine.

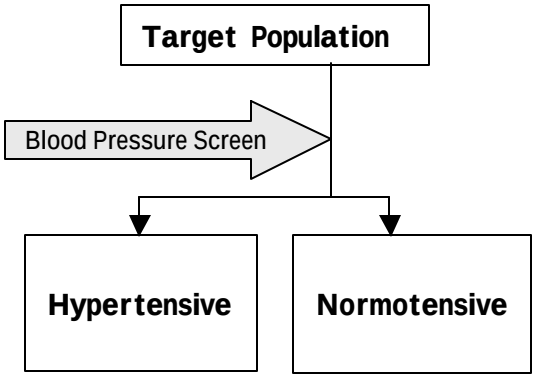
In the last notebook, Population Perspectives I, we looked at the role of health care epidemiology in defining the needs of populations and the important facets of health care delivery. We also explored how selection of a study population can affect the research questions that are addressed in health care research. This notebook will focus on how health care epidemiology characterizes the need, demand, and utilization of services in a population.

How are the health care needs of a population identified?

It seems obvious that the delivery of adequate health care requires a strong understanding of the medical needs of a target population. Typically, the population can be divided into those who are at increased (high) risk, or diseased, and those who are not at increased risk, or non-diseased. These categorizations can be broad or narrow depending upon the question being addressed.



For this notebook, we will utilize hypertension as the disease of interest. To determine which category individuals in the population fall into, a screening or diagnostic test is usually applied. The tests may include screening tools, patient interviews (to assess behavior patterns such as smoking), physical examinations, or in some cases, surgical procedures. For our example, hypertension diagnosis involves taking a blood pressure reading.



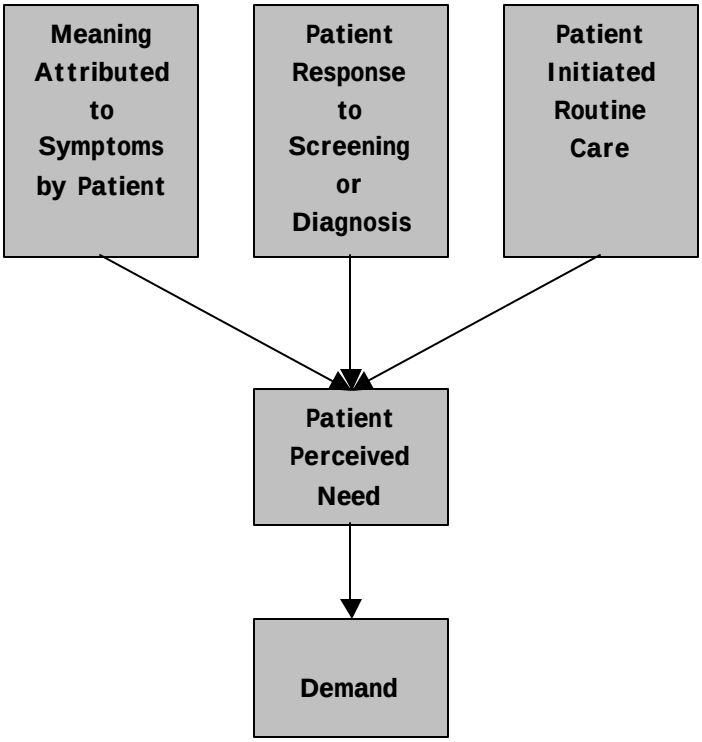
By this straightforward test, we have now defined a sub-population with a need for health care. In general, those with more severe disease will require a need for more service than those with less severe disease. Again, we are beginning to classify sub-populations, in this case diseased individuals who have differing levels of health care needs.

What is Demand?

To access health services, individuals must perceive a need for care. Perception may be based on the meaning patients attribute to symptoms, patient response to screening tests or disease diagnosis results, and/or patient initiated routine care seeking (e.g. periodic eye exams). The perception of need by the patient or someone whose opinion the patient values is translated into a demand for care. The patient's perceived need for care (demand) may differ from the clinician's evaluation of the patient's need for care.

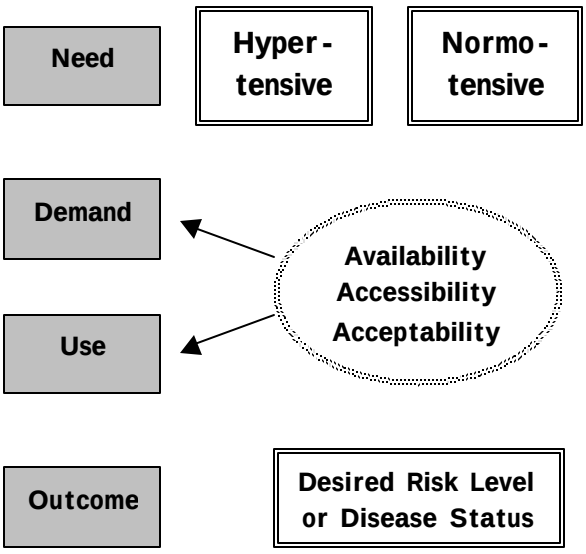
Further, demand for care does not necessarily translate into utilization of health services. People differ on the degree to which they accept reduced health (e.g. pain). The

overall demand for care may continue to grow despite improvement in overall population health status because of societal changes in expectations about health.



What other factors impact utilization of services?

Although individuals may need or demand care, other factors may determine whether the patient receives the care. These factors include availability of care, accessibility of care, and acceptability to the patient. The following diagram allows for the visualization of how numerous factors may affect the hypertensive and normotensive populations.



Availability can be thought of as the adequacy of components of the health care infrastructure (clinical settings) such as hospitals, doctors' offices or community clinics, personnel to staff those locations, and necessary equipment. Accessibility can range from issues of having sufficient funds to partake of medical care to having adequate transportation or childcare, which are often physical barriers to accessing health care for the elderly or mothers.

Even with good availability and accessibility to health care, there are no guarantees that individuals will find the appropriate care acceptable. Often pain, whether real or perceived, or emotional issues, such as embarrassment, are barriers to obtaining care. One of the best examples of this is use of colonoscopy or sigmoidoscopy as a screening test for colon cancer in high-risk patients. Many individuals who have available and accessible health services fail to undergo this screening because of these very issues. In addition, customs and understanding of the meaning of health vary among different cultures. For example, religious beliefs may impact one's willingness to accept care.

Thus it is important to identify issues that may impact individuals' ability or willingness to receive appropriate medical care. Defining and addressing potential barriers should allow the targeting of interventions and thereby enhance the health of the diseased/at-risk individuals within your population. These interventions are most often targeted at the system in which the care is provided.

How do need, demand, and other factors combine in the utilization of health care services?

It is helpful to consider how people differ in terms of need, demand, and utilization of services. Barbara Hulka (1978) divides the population into six categories. The first group (1) has need, demands care, and uses services. These patients are considered to be compliant, as their use of health care services is appropriate for their health status. It should be noted, that appropriate use of health care does not always mean that the best outcomes will result. However, we can assume that in general, these individuals will have better outcomes than those who did not utilize or have access to appropriate care.

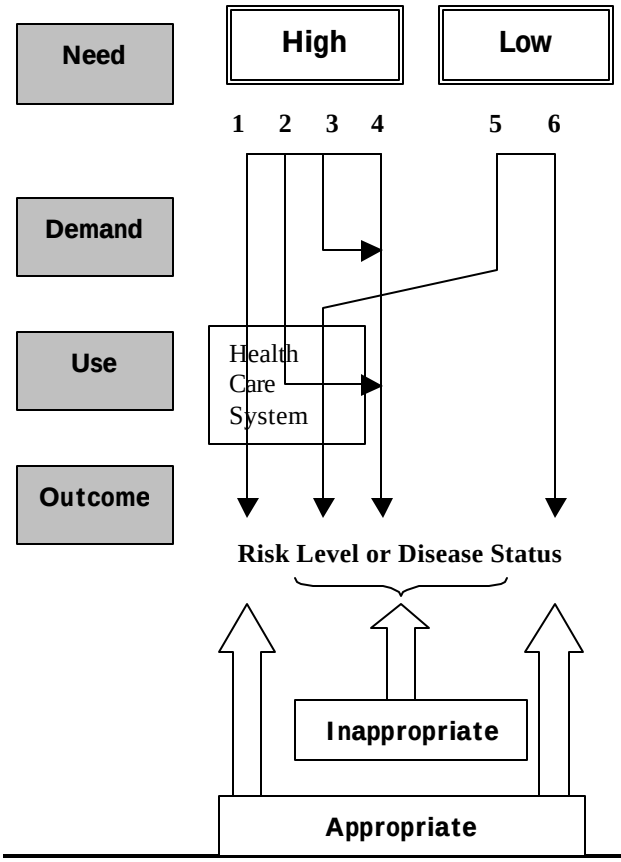
The second group (2) is those individuals who have both high need and demand, but do not use health care services fully. These patients are considered non-compliant, as they have both demand for and use of health care, yet their use is incomplete. Health care research seeks to understand why individuals may not fully use health care services when these services are available to them. Reasons may either relate to the individual or the system in which care is provided. While not guaranteed, we assume these individuals will have poorer outcomes than those who properly utilize services.

The third group (3) includes individuals with high need and demand but no utilization of services. Determining the reason for this lack of utilization can be difficult because these individuals opt out of the health care system, and thus become hard to identify and locate. We again assume that these patients will have poorer outcomes.

The last group that needs care (4) consists of individuals with need but no demand for or utilization of health care services. These patients have their needs unmet. Determining the reason for this lack of demand is generally difficult because these individuals have not perceived a need for care and hence have no contact with the health care system. They are difficult to identify and locate. For this reason, this group may be the hardest to characterize adequately, and as such, the most difficult in which to intervene. However, potential causes include lack of available services for diagnosis or an individual's lack of knowledge about health. Again, we expect that these individuals will have poorer outcomes.

Similar descriptions can be made for those individuals with low or no need. Group 5 encompasses healthy individuals who have little need for health care services yet utilize them regardless. These individuals can be described as "the worried well". Individuals in this group are of concern as they are utilizing resources that could better serve groups with higher need.

Group 6 represents a generally healthy population with no consumption of health care. This is considered appropriate utilization.

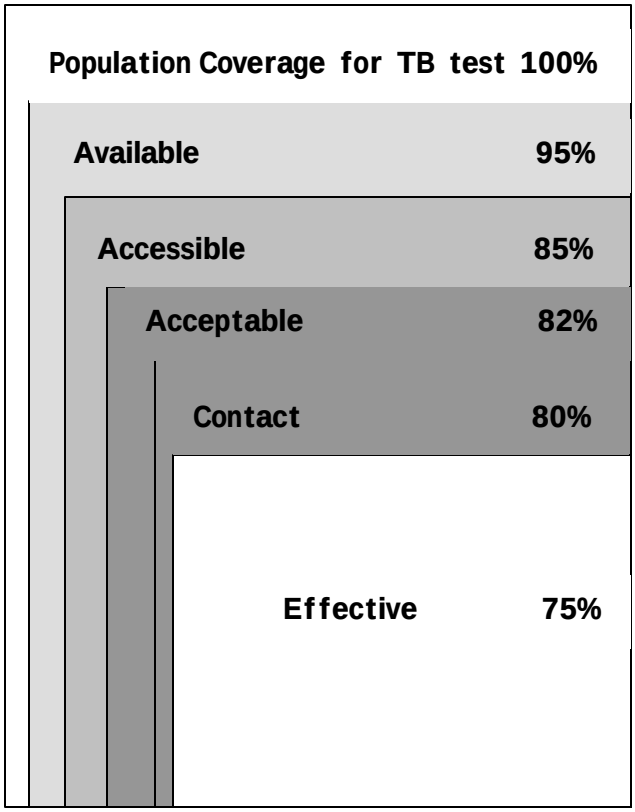


This framework has allowed us to classify the population with different needs, demand, and utilization of services. In most cases, this combination eventually influences outcomes. The natural progression from this point is to determine if the population's use of services is appropriate for the level of need. The high need-demand-usage population and the low need-demand-usage populations are consuming medical services appropriately, while those populations in-between are not.

It is important to remember that we cannot predict outcomes based solely on this information. However, these distinctions are important in health policy research and the targeting of health care services and interventions.

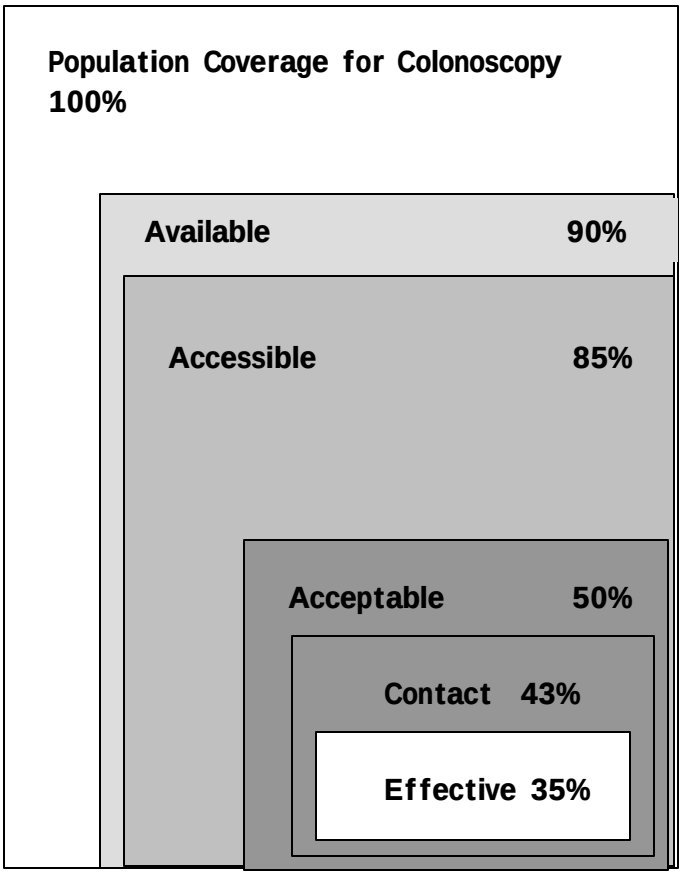
Another way of characterizing a population's use of health services

We can also use health care coverage as a slightly different way of evaluating the factors that impact the utilization and eventual effectiveness of services in a population. We can start with a population and then determine how much of that population is covered by health care services at each level: available care, accessible care, acceptable care, contact, and effectiveness. A change in the degree of coverage at any level will ultimately impact the health outcomes of that population.



Note the figures in this section. We are starting with the same population, but coverage at each level is different for the separate interventions. For instance, the first diagram represents skin test screening for tuberculosis, which is a commonly available and acceptable test. Accessibility may be a problem since the test requires the patient to return in 48 hours to have the test read. Thus, individuals who work or have small children might have less accessibility to the test than others. Yet, because this test is relatively low cost, readily available, and causes minimal discomfort, the overall coverage is high.

The second diagram for health care coverage represents colonoscopy, a screening test for colon cancer. In contrast to TB screening coverage, this test may be less widely available and acceptable to the patient, which ultimately changes the distribution of health care coverage. Here we can see how changes in availability and acceptability ultimately decrease the overall coverage for this test as compared to the TB skin test.



These figures illustrate how any one factor can substantially reduce the prevalence of a screening tool within a population. Through this evaluation, we have also identified a drawback of colonoscopy (acceptability) that can be altered either through changes in the test itself, or through patient education of the risks and benefits. These changes can ultimately lead to increased screening coverage of this population.

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Suggested Readings on the Topic:

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